

NOTE

NEW REPORTS OF POACEAE IN THE ROCKY  
SUBSTRATUM OF MUNICIPALITY OF PEROTE,  
VERACRUZ, MEXICO

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Despite the constant and longstanding impact of human activities in central Veracruz, México, the native vegetation is considered to be relatively undisturbed. Principally, human activity has taken the form of goat grazing, the felling of wood for timber and fuel, and fires. Nevertheless, the rocky habitat of volcanic and limestone origin has managed to conserve its original vegetation. However, the area is little known, botanically.

Over the course of two years, botanical material was collected from central Veracruz during several exploratory expeditions. Species never before recorded in the state were found during these visits: *Garrya ovata* Benth. subsp. *goldmanii* (Wooton & Standl.) G. V. Dahling and *Beschorneria calcicola* García-Mend. (Castillo-Campos et al. 1998) are among the most noteworthy, along with new recordings of species from the Caryophyllaceae: *Drymaria malachioides* Briq., *D. molluginea* (Lag.) Didr., *D. xerophylla* A. Gray, *Polycarpon tetraphyllum* (L.) L., and *Scleranthus annuus* L. (Escamilla and Castillo-Campos 2000). Because they are characteristic of this type of substrate, it is not surprising that Poaceae are abundant in the study area.

The municipality of Perote is found in the central region of Veracruz State (Figure 1). This region includes a plateau and features the second highest elevation in the state with the Cofre de Perote, at 4282 m (Soto and Angulo 1990). According to Marchal and Palma (1985), the site has three different geological compositions: calcareous rocks, detrital rocks, and basalt filtering accompanied by breach and volcanic ash deposits. The municipality of Perote has two types of climate: subhumid temperate, corresponding to the driest of this subtype, and dry temperate.

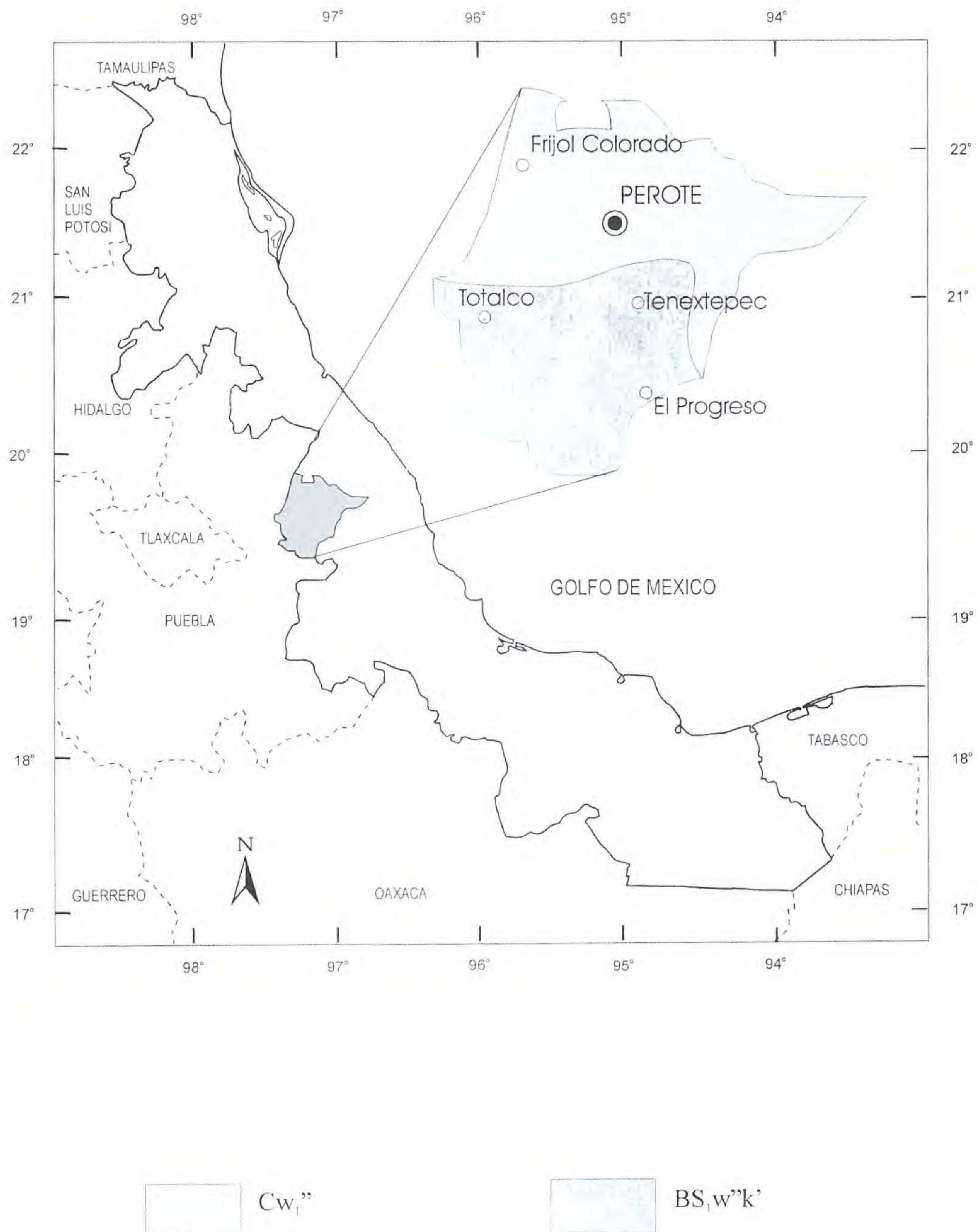


Figure 1. Municipality of Perote, Veracruz (Gobierno del Estado de Veracruz 1988). Climate types follow Soto and Angulo (1990):  $Cw_1''$  = subhumid temperature,  $BS_1w''k'$  = dry temperate.

Following the classification of Miranda and Hernández X. (1963), the types of vegetation present in the rocky area of Perote are either oak and pine forest or *Yucca-Nolina* thicket.

Determination of the material collected yielded the following six new reports for the state of Veracruz: *Aristida purpurea* var. *curvifolia*, *Bromus diandrus*, *Calamagrostis pringlei*, *Erioneuron*

*avenaceum* var. *avenaceum*, *Muhlenbergia glabrata*, and *Setaria reverchonii* subsp. *ramiseta*. The results obtained from this study demonstrate the importance of intensifying botanical exploration in little-known areas such as the rocky areas of central and northern Veracruz. It is possible that these sites feature unknown species, not only from the Poaceae but from other plant families as well.

#### SPECIMEN CITATIONS

##### *Aristida purpurea* Nutt. var. *curvifolia* (E. Fourn.) Allred

Plants from 20 to 40 cm tall; the first glume is shorter than second, obtuse glumes, 7 and 10–11 mm long, respectively.

Plants were growing in xerophytic thickets and rocky soil; abundance was moderate. This variety is endemic to México in the northern states.

VOUCHER SPECIMEN: MÉXICO. Veracruz: Municipality of Perote, 3 km S of Totalco, between Totalco and Alchichica, elev. 2350 m, 19 Nov 1998, *Castillo-Campos, Avendaño & Acosta 18,976* (XAL).

##### *Bromus diandrus* Roth

Plants from 20 to 70 cm tall; panicle loose and open; lemma narrow, acuminate, bifid, awn 3–6 cm long.

*Bromus diandrus* was found growing in xerophytic brush and rocky soil; abundance was scarce. This species was introduced from the mediterranean climates of Europe.

VOUCHER SPECIMEN: MÉXICO. Veracruz: Municipality of Perote, Progreso, elev. 2460 m, 17 Nov 1998, *Castillo-Campos, Avendaño & Acosta 18,853* (XAL).

##### *Calamagrostis pringlei* Beal

Rhizomatous plants with simple or tufted culms; leaf blades involute when dry, pilose; panicle narrow, with ascending branches; glumes almost identical, acuminate and scabrous.

Plants were growing in xerophytic thickets with moderate abundance. *Calamagrostis pringlei* has been described from the Mexican eastern Sierra Madre.

VOUCHER SPECIMENS: MÉXICO. Veracruz: Municipality of Perote, on the summit of Cofre de Perote, elev. 4180 m, 20 Oct 1998, *Castillo-Campos, Avendaño & Acosta 18,655* (XAL); SW of Tenex-tepec Hacienda, elev. 2360 m, 5 Nov 1998, *Castillo-Campos, Avendaño & Acosta 18,766* (XAL).

*Erioneuron avenaceum* (Kunth) Tateoka var. *avenaceum*

There are four varieties of the species, three in South America and one in North America. *Erioneuron avenaceum* var. *avenaceum* is distinguished by the fact that its glumes exceed the lower floret, the second glume is 5–6.5 mm long, and lobes of the lemma are 1.5–2 mm long.

Plants were found growing in xerophytic thickets and rocky soil; abundance varied from scarce for material collected in a wide open valley to abundant for material collected from a limestone slope. Distribution of var. *avenaceum* runs from the southern United States (Arizona and New Mexico) to southern México.

Determination of this species was carried out on the basis of Valdés-Reyna and Hatch (1997) studies, which considered *Dasyochloa avenacea* (Kunth) Willd. ex Steud. as a synonym.

VOUCHER SPECIMENS: MÉXICO. Veracruz: Municipality of Perote, 1 km W of Frijol Colorado, elev. 2200 m, 20 Nov 1998, *Castillo-Campos, Avendaño, Palestina & Acosta 16,800* (XAL); Progreso, elev. 2460 m, 17 Nov 1998, *Castillo-Campos, Avendaño & Acosta 18,851* (XAL); 3 km S of Totalco, between Totalco and Alchichica, elev. 2350 m, 19 Nov 1998, *Castillo-Campos, Avendaño & Acosta 18,974* (XAL).

*Muhlenbergia glabrata* (Kunth) Trin.

Plants more than 1 m tall; glumes from half to the same size as lemma, lemma slightly bifid with an awn that emerges from between teeth.

Abundance of *Muhlenbergia glabrata* was common, with plants growing in xerophytic brush and oak forest and associated with *Astragalus*, *Bouvardia*, *Mammillaria*, *Plantago*, and *Yucca*. This species is endemic to México.

VOUCHER SPECIMENS: MÉXICO. Veracruz: Municipality of Perote, W of Frijol Colorado, elev. 2200 m, 28 Nov 1998, *Castillo-Campos, Avendaño, Palestina & Acosta 16,792* (XAL); S of Totalco, elev. 2360 m, 28 Oct 1998, *Castillo-Campos, Avendaño & Acosta 18,602, 18,637* (XAL); SW of the Tenexptepec Hacienda, elev. 2360 m, 5 Nov 1998, *Castillo-Campos, Avendaño & Acosta 18,749, 18,791* (XAL).

*Setaria reverchonii* (Vasey) Pilger subsp. *ramiseta* (Scribn.) W. E. Fox

A small plant, 25 cm tall; bristles not exceeding the spikelet; first glume half the length of spikelet.

Abundance of subsp. *ramiseta* was scarce. The plants were found growing in xerophytic brush and rocky soil. This subspecies is native to the United States and México.

Determination of this species was carried out on the basis of the new combinations proposed by Fox and Hatch (1999) in which three taxa are classified in the subgenus *Reverchoniae*: *Setaria reverchonii* subsp. *reverchonii*, *S. reverchonii* subsp. *ramiseta*, and *S. reverchonii* subsp. *firmula*.

VOUCHER SPECIMEN: MÉXICO. Veracruz: Municipality of Perote, SW of the Tenex-tepec Hacienda, elev. 2360 m, 5 Nov 1998, *Castillo-Campos, Avendaño & Acosta 18,805* (XAL).

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